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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/523,665

02/04/2005

Ken Tsuzuki

14321.64

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7590

06/26/2007

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EXAMINER

THOMPSON, TIMOTHY J

ART UNIT

PAPER NUMBER

2873

MAIL DATE

DELIVERY MODE

06/26/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/523,665

Applicant(s)

TSUZUKI ET AL.

Examiner

Timothy J. Thompson

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
4a) Of the above claim(s) 6-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 11-15 is/are rejected.
- 7) ☒ Claim(s) 5 and 16 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shen et al.(U.S. Pat. No. 6,075,254) in view of Miyazaki et al.(U.S. Pat. No. 2007/0076999) and Naaman et al.(U.S. Pat. No. 7,118,861).

Regarding claim 1, Shen et al. discloses a semiconductor optical modulator having a layered structure in which a semi-insulating type cladding layer(fig 1, 41; col 5, lines 7-15; since Naaman discloses AlGaAs is a semi-insulating material [col 7, lines 45-55]), a semiconductor optical waveguide core layer(fig 1,13; col 5, lines 7-15, since Miyazaki discloses that GaAs is a semi-conductor[para 0203]), and a semi-insulating type cladding layer are sequentially laminated on a substrate(fig 1, 19; col 5, lines 7-15), a part of at least one of the semi-insulating type cladding layers including a surface opposite from a laminated surface with the semiconductor optical waveguide core layer is an n-type cladding layer, or all of at least one of the semi-insulating type cladding layers is an n-type cladding layer(col 5, lines 7-15).

Regarding claim 2, Shen et al. discloses the modulator has a waveguide structure that is a high-mesa waveguide structure or a ridge waveguide structure(fig 1).

Regarding claim 3, Shen et al.. discloses in that electrodes(fig 1, 25, 27) are respectively connected to the n-type cladding layer or the semi-insulating type cladding layer placed directly on the substrate and to the n-type cladding layer or the semi-insulating type cladding layer including a surface opposite from a laminated surface with the semiconductor optical waveguide core layer laminated on the substrate(col 4, lines 45-60).

Regarding claim 4 , Shen et al.. discloses the electrodes are co-planar(fig 1, 25, 27).

Regarding claim 11 , Shen et al.. discloses a substrate(fig 1, 15); a first semi-insulating cladding layer laminated on the substrate(fig 1, 41); a semiconductor optical waveguide core layer laminated on the first semi-insulating type cladding layer(fig 1, 13); and a second semi-insulating cladding layer laminated on the semiconductor optical waveguide core layer(fig 1, 19), at least a portion of the first or second semi-insulating cladding layers comprising an n-type cladding structure(col 5, lines 7-15). Regarding the layers being laminated the method of forming are not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Regarding claim 12 , Shen et al.. discloses each of the first and second semi-insulating cladding layers comprises a first surface disposed adjacent to the semiconductor optical waveguide core layer and an opposing second surface, and wherein the second surface of at least one of the first and second semi-insulating cladding layers comprises an n-type cladding structure(fig 1, col 5, lines 7-15).

Regarding claim 13, Shen et al. discloses all of at least one of the first or second semi-insulating cladding layers comprises an n-type cladding structure(fig 1, col 5, lines 7-15).

Regarding claim 14, Shen et al. discloses the modulator has a waveguide structure that is a high-mesa waveguide structure or a ridge waveguide structure(fig 1).

Regarding claim 15, Shen et al. discloses a first electrode connected to the first semi-insulating cladding layer; and a second electrode connected to the second semi-insulating cladding layer(fig 1).

Allowable Subject Matter

Claim 5, 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The allowable feature being an optical splitter by which input light is split into two light beams, and an optical coupler by which light beams modulated by the semiconductor optical modulator are combined together.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Thompson whose telephone number is (571) 272-2342. The examiner can normally be reached on 8:30 AM - 6:00 Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on (571) 272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Timothy Thompson', with a large, stylized initial 'T' and a long, sweeping underline.

**TIMOTHY THOMPSON
PRIMARY EXAMINER**